

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS

PACIFIC INDEMNITY COMPANY,	: CIVIL ACTION NO.
	: 04-11975(RWZ)
Plaintiff,	:
v.	:
ALFRED KEMP, Individually and d/b/a	:
KEMP PLUMBING	MEMORANDUM IN SUPPORT
and	OF MOTION TO EXCLUDE
MARTIN SANDBORG, Individually and d/b/a	TESTIMONY OF DEFENDANT
SANDBORG PLUMBING AND HEATING,	KEMP'S EXPERT QUINN HORN
Defendants.	UNDER RULE 702 OF THE
	FEDERAL RULES OF EVIDENCE
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I. INTRODUCTION

Plaintiff respectfully requests that the Court exclude the proposed testimony of defendant Kemp's expert, Quinn Horn, because Horn's theory is not based upon a reliable foundation and is, in fact, directly refuted by the very data upon which Horn purports to rely. Because Horn's theory does not "fit" the facts of the case (*Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 591-92, 113 S. Ct. 2186 (1993)), it is not "relevant to the task at hand" (*Daubert*, 509 U.S. at 592-93) and must be excluded.

II. ARGUMENT

As discussed briefly in the Memorandum in Support of Plaintiff's Motion in Limine to Exclude Certain Testimony From Defendant Kemp's Experts Quinn Horn and Timothy Myers (Document 17), which is directed toward another aspect of Horn's testimony, a focal point of the proposed expert testimony in this case is a cold water valve assembly which was found loose in the fire debris beneath the kitchen sink of the carriage house where the fire giving rise to this

litigation occurred.¹ Defendant Kemp admits that this assembly was in place when he began working under the kitchen sink on the afternoon preceding the fire's discovery. Plaintiff maintains that Kemp unsoldered the valve assembly at both ends with his torch on the afternoon preceding the fire's discovery and, in the course of doing so, accidentally started the fire.

Kemp denies using a torch at all that afternoon. Quinn Horn, one of Kemp's retained experts, was tasked with explaining how the solder joint between the cold water valve and a copper tube ("riser") could have melted apart during the fire (rather than being melted apart by Kemp's torch prior to the fire) and, yet, left behind what Horn concedes is an unmelted ridge of solder that was located immediately adjacent to the former location of the valve on the riser. (Rule 26 Report of Quinn Horn, Exhibit "A," Pp. 8, 33-34). As noted in Exhibit "B" to Plaintiff's Motion in Limine to Exclude Certain Testimony from Defendant Kemp's Experts Quinn Horn and Timothy Myers (Document 16), plaintiff's metallurgical expert, Thomas Eagar, explains that this ridge of solder is a "signature" indication that the soldered joint between the valve and the riser could only have been melted apart by the focused, intense heat from a torch, and could not have been melted apart by exposure to the general heat from a fire. Thus, the loose valve assembly directly refutes Kemp's denial that he was using his torch beneath the kitchen sink on the afternoon preceding the fire's discovery.

In obvious acknowledgement of the significance of the unmelted solder ridge, Horn devised a theory that the soldered joints at both ends of the cold water valve assembly could have melted apart in the fire, while leaving the adjacent solder ridge intact and unmelted, if a sufficient quantity of lead from the leaded brass valve and the brass fitting at the opposite ends of the valve assembly leached into the tin solder in the solder joints in order to lower the melting temperature of the solder in the joints some 57°F to 79°F lower than the melting temperature of

¹ The assembly is depicted in Exhibit "C" to the Affidavit of Thomas W. Eagar ("Eagar Aff.") submitted in support of this Motion.

the supposedly “pure” solder on the ridge. (Exhibit “A,” Pg. 34). This would require formation of a layer or, “film,” of a lead/tin solder alloy in the joints that was 74% tin and 26% lead.² Id. According to the “lead-tin phase diagram” upon which Horn relies (Exhibit “A,” Pg. 36, Figure 33) any lower (or, for that matter, higher) concentration of lead in the alloy would dramatically increase the melting temperature of the alloy back to that of the melting temperature of pure tin solder.

To give lip service to the scientific method (and, presumably, with an eye looking over his shoulder at potential Daubert issues), Horn set out to “test” his theory.³ Horn arranged for a lab to conduct “EDS” analysis of the layer of solder from the joint between the cold water valve and the riser to which it had been soldered. (Exhibit “A,” Pp. 15, 20-21, Figures 20-21). Additionally, although no test results are reflected in his report, Horn’s report implies that EDS analysis was also done of the solder from the joint between the copper tube at the opposite end of the cold water valve assembly and the fitting which had been soldered to that end of the assembly. (Exhibit “A,” Pg. 32, Item 4). Finally, some EDS analysis was done on selected exterior and interior surfaces of the valve, the fitting, and the copper tubes to which they had been soldered. (Exhibit “A,” Pp. 8-11, 15-18, 27-30).

² These are “atomic” percentages. According to the data upon which Horn relies (Exhibit “A,” Pg. 36, Figure 33), the percentages by weight would be 63% tin and 37% lead (Eagar Aff., ¶5).

³ For reasons stated at Paragraphs 1(a), (b) (d) and 3 of Dr. Eagar’s rebuttal report, (Document 16, Exhibit “E”) plaintiff would, if necessary, prove at trial that Horn’s theory is technical nonsense. For one thing, the quantity and location of lead in the valve and fitting are such that a layer of solder consisting of a tin/lead alloy could not possibly form, and certainly not with a concentration of lead sufficient to significantly lower the melting temperature of the tin solder (Eagar Aff., ¶6). If anything, Horn’s own testing confirms this (Eagar Aff., ¶6). However, plaintiff does not invoke the court’s “gatekeeping” function to wage a battle of the experts. Rather, the issue here is whether Horn’s opinion even makes it onto the battlefield, when the very data he gathered to test his theory, do not “fit” the theory but, instead, directly refute that theory.

EDS analysis produces an elemental profile, or “spectra,” identifying what elements are present at a particular location, and in what proportions. In this case, the results of the EDS analysis do not “fit” and, in fact, refute Horn’s theory.

Confirmation of Horn’s theory would have required the detection of lead as well as tin in the solder layer which had formed the joint between the valve and the copper tube in a proportion, by weight, of 63% tin and 37% lead (or, by “atomic” percent, 74% tin and 26% lead) or, at least, something approaching those proportions. However, the only EDS analysis of solder from the layer between the valve and the copper riser that is depicted, and purportedly relied upon, in Horn’s report showed no lead!⁴ This profile was taken from the area denoted as location “1” on Figure 20, which was on the solder layer of a cross-section of the leaded-brass cold water valve. The EDS profile of this location, Figure 21, shows no lead in the solder at this location.⁵

Under Rules 26(a)(2)(B) and 37 (c)(1) of the Federal Rules of Civil Procedure, Horn’s opinions and proposed testimony are limited by the data upon which he relies, as disclosed in his Rule 26 report. However, the fact is that there are no cross-sections of the soldered layers between brass-to-copper joints which show the presence of lead, and there is simply no data at

⁴ Horn’s report does reference EDS spectra which report the presence of lead at four locations. (Exhibit “A,” Figures 12, 18, 29 and 30). Figure 12 reportedly detected lead on the unmelted solder ridge. (Exhibit “A,” Pp. 8 and 11). As discussed below, the finding of lead in the solder ridge actually further refutes Horn’s theory regarding a reduced melting temperature of the solder in the valve/riser joint as compared to the melting temperature of the solder in the ridge. Figures 18, 29, and 30 were taken on interior surfaces of the leaded-brass valve and fitting, and, by Horn’s own admission, prove nothing, since those items contained lead as manufactured. (See Discussion of Figures 29 and 30 at Exhibit “A,” Pg. 27: “the copper and lead are from the brass fitting”).

⁵ The presence of an element in the EDS spectra is denoted by a “peak” on the profile labeled with the element’s atomic symbol. The atomic symbol for lead, “Pb” does not appear on Figure 21. As would be expected with tin-based solder, the prevalent element on that profile is tin, which has the atomic symbol “Sn.” (Eagar Aff., ¶4).

all from the testing regime conducted by Horn, or at his direction, that shows the presence of lead in the soldered layer between the copper pipe and the brass valves and fittings in a quantity that is even remotely sufficient to lower the melting temperature of the solder in this location appreciably, if at all, below the melting temperature of the solder in the unmelted solder ridge, which Horn states is in the range of 418° F to 440° F. In fact, Horn reports the presence of lead in the solder ridge, (Exhibit “A,” Pg. 8 and Figure 12, Pg. 11), so that, based on Horn’s own test data, the melting temperature of that unmelted ridge should have been at least as low as, if not lower than, the melting temperature of the solder in the joints that did melt.

Thus, the data gathered by Horn to test his theory that the soldered joints could have melted apart in the fire without melting the directly adjacent solder ridge, if the solder in the joints consisted of an alloy containing a designated quantity of lead, directly refute that theory. The Scientific Method, Daubert, and Fed. R. Evid. 702, would therefore all call for a scientific mind to abandon that theory. Nevertheless, Horn’s report stubbornly adheres to this theory in the face of the data which directly refute the theory, and therefore deprive the theory of any semblance of reliability or relevance. In light of the facts and data he must work with, facts and data that he himself gathered, Horn’s opinion does not even rise to the level of “junk science.” Horn’s theory lacks the slightest semblance of a scientific basis.

Further, there is yet another illustration of Horn’s theory failing to “fit” the facts. Daubert, 509 U.S. at 591-592, 113 S. Ct. 2786. Horn was also faced with explaining why the two soldered joints on the cold water valve assembly (which Kemp admitted that he needed to unsolder with the torch he had with him on the afternoon preceding the fire) would have separated during the fire, while many other soldered joints located within a matter of inches of the cold water valve assembly did not come apart under identical fire conditions. (Exhibit “A,” Pg. 33). To explain this, Horn relies upon the supposedly “unique” characteristics of

“brass/copper” joints as compared to “copper/copper” joints. (Exhibit “A,” Pg. 34). Again, this explanation turns an unscientifically blind eye to the fact that there were many other, identically-configured and unmelted “brass/copper joints” (assembled by Mr. Kemp at the same time as and with the same materials as the supposedly “unique” joints which did melt apart), and located within inches of the joints which did melt apart (Eagar Aff., Paras. 7 – 9, Exhibits “C” and “D”). Here, again, Horn proposes to proceed in direct disregard of physical facts.

III. CONCLUSION

This is not a situation where the underpinnings of Horn’s theory are merely “shaky.” The data Horn gathered to test his theory directly refute that theory. Such testimony is plainly neither reliable nor relevant, and must be excluded under Rule 702 and Daubert.

Respectfully submitted,

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